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DARK-SPORED AGARICS—IV

DECONICA, ATYLOSPORA, AND PSATHYRELLA

WILLIAM A. MURRILL

In previous articles of this series, the large, fleshy-stemmed species have been discussed. The present article deals with species having a slender, tubular stipe with cartilaginous cortex, and not furnished with an annulus. The three genera here treated may be distinguished as follows:

Lamellae decurrent.	<i>Deconica</i> .
Lamellae adnate or adnexed.	
Spores purplish-brown or dark-fuscon.	<i>Atylospora</i> .
Spores black.	<i>Psathyrella</i> .

DECONICA (W. G. Sm.) Sacc. Syll. Fung. 5: 1058. 1887

Delitescor Earle, Bull. N. Y. Bot. Gard. 5: 434. 1909.

This is a very small genus, separated from *Psilocybe* as a sub-genus by W. G. Smith in 1870, because of its decurrent lamellae, and raised to generic rank by Saccardo in 1887. The attachment of the lamellae often varies to adnate or to adnate with a decurrent tooth. Two species, *D. bullacea* and *D. scatigena*, were discussed in my article on tropical agarics published in *Mycologia* for January, 1918.

Stipe 5-8 cm. long.	1. <i>D. coprophila</i> .
Stipe 1-5 cm. long.	
Pileus floccose or tomentose, not striate.	
Pileus floccose near and on the margin.	2. <i>D. rhomboidospora</i> .
Pileus tomentose over the entire surface.	3. <i>D. tomentosa</i> .
Pileus glabrous, usually striate.	
Pileus dry or hygrophanous, not viscid.	
Stipe 1-2.5 cm. long.	
Pileus not umbonate.	4. <i>D. bulbosa</i> .
Pileus umbonate.	5. <i>D. semistriata</i> .
Stipe 2.5-5 cm. long.	
Pileus not decidedly umbonate.	6. <i>D. polytrichophila</i> .
Pileus decidedly umbonate.	7. <i>D. pyrispora</i> .
Pileus viscid.	
Spores $7 \times 5 \mu$.	8. <i>D. subviscida</i> .
Spores $12 \times 9 \mu$.	9. <i>D. bullacea</i> .

1. *DECONICA COPROPHILA* (Bull.) Sacc. Syll. Fung. 5: 1058. 1887

Agaricus coprophilus Bull. Herb. Fr. *pl.* 566, f. 3; hyponym. 1791; Pers. Syn. Fung. 412. 1801.

Pileus hemispheric to expanded, umbonate, 2–4 cm. broad; surface smooth, fulvous-isabelline; lamellae arcuate-subdecurrent, broad, livid-blackish; spores 13–14 x 8 μ ; stipe attenuate upward, smooth, pallid, pruinose to glabrous above, glabrous and shining below, subfistulose, 5–8 cm. long, 2–3 mm. thick.

TYPE LOCALITY: France.

HABITAT: On manure or manured ground.

DISTRIBUTION: New York and Michigan; also in Europe.

ILLUSTRATIONS: Bull. Herb. Fr. *pl.* 566, f. 3; Cooke, Brit. Fungi. *pl.* 608A (608A).

There are several specimens bearing this name at Albany collected by Peck in New York, and also one collection sent by Kauffman from Michigan. The spores of Peck's plants are elongate-ellipsoid, smooth, isabelline under the microscope, about 12 x 6–7 μ .

2. *DECONICA RHOMBOIDOSPORA* Atk. Ann. Myc. 7: 368. 1909

Pileus ovoid to convex, gregarious to subcespitose, 0.5–1 cm. broad; surface dry, smooth, not striate, ochraceous to clay-colored, adorned on and near the margin with whitish flocci; context ochraceous, with slightly mealy taste and no characteristic odor; lamellae adnate and decurrent, about 2 mm. broad, becoming chestnut-colored with whitish, dentate edges; spores ovoid to subrhomboid, smooth, purplish-brown, 5–7 x 4–5 μ ; stipe flexuous, hollow, chestnut-colored within, clay-colored and whitish-fibrillose without, 2–3 cm. long, 2 mm. thick; veil evident when young, white, soon appendiculate.

TYPE LOCALITY: Ithaca, New York.

HABITAT: On leaves and decayed wood on the ground.

DISTRIBUTION: Known only from the type locality.

The type specimens, which I have not seen, were found by Jackson on June 5, 1904. According to Atkinson, it is near *D. nucis-seda* Fries.

3. *Deconica tomentosa* sp. nov.

Pileus convex to nearly plane, not umbonate, solitary, about 1.5 cm. broad; surface dry, not at all striate, uniformly ochraceous-

ferruginous, clothed with a tufted, yellowish-brown tomentum that has a tendency to crack in areoles, reminding one of some species of *Inocybe*, margin incurved, entire, slightly paler; lamellae distinctly decurrent, distant, narrow, nearly white, becoming pale-purplish-brown, entire and scarcely paler on the edges, beautifully undulate in dried specimens; spores ellipsoid, rounded at both ends, smooth, pale-smoky-isabelline under the microscope, pale-purplish-brown in mass, $7-9 \times 4-6 \mu$; stipe short, tapering downward, yellowish-white, clothed above with whitish tomentum and fibrils, about 1.5 cm. long, and 2 mm. thick.

TYPE LOCALITY: Auburn, Alabama.

HABITAT: On the ground.

DISTRIBUTION: Known only from the type locality.

Type collected by F. S. Earle on November 11, 1899.

4. *DECONICA BULBOSA* Peck, Ann. Rep. N. Y. State Mus. **46**: 107.
1893

Pileus submembranaceous, convex becoming nearly plane, 6-12 mm. broad; surface glabrous, slightly striate on the margin, whitish tinged with brown; lamellae broad, distant, adnate, purplish-brown; spores ellipsoid, purplish-brown, $7.5 \times 5 \mu$; stipe slender, firm, hollow, bulbous, densely grayish-fibrillose, 1.5-2.5 cm. long, scarcely 1 mm. thick.

TYPE LOCALITY: Delmar, New York.

HABITAT: On dead stems of herbs.

DISTRIBUTION: Known only from the type locality.

The small type specimens are at Albany, collected by Peck in September.

5. *DECONICA SEMISTRIATA* Peck, Ann. Rep. N. Y. State Mus. **51**:
291. 1898

Pileus thin except on the prominent broadly-umbonate disk, 8-10 mm. broad; surface glabrous, somewhat wavy on the margin and striate to the umbo, grayish-brown, paler when dry and less distinctly striate, the broad umbo yellowish; lamellae broad, distant or subdistant, adnate or slightly decurrent, purplish-brown, whitish on the edges; spores compressed, suborbicular, $6.5-7.5 \times 6.5 \mu$; stipe equal, firm, short, slightly floccose-fibrillose, stuffed with a whitish pith, colored like the pileus, 16-20 mm. long, 1 mm. thick.

TYPE LOCALITY: Gansevoort, New York.

HABITAT: On damp ground in woods.

DISTRIBUTION: Known only from the type locality.

Known only from two little plants collected by Peck in July and now attached to a sheet at Albany.

6. *Deconica polytrichophila* (Peck) comb. nov.

Agaricus polytrichophilus Peck, Ann. Rep. N. Y. State Mus. 30: 42. 1878.

Psathyra polytrichophila Sacc. Syll. Fung. 5: 1068. 1887.

Deconica bryophila Peck, Ann. Rep. N. Y. State Mus. 46: 106. 1893.

Pileus thin, convex or subcampanulate, gregarious, 4–10 mm. broad; surface glabrous, sometimes with a slight umbo, hygrophalous, striatulate and brown when moist, dull-ochraceous or buff when dry, somewhat shining; context rather fragile, odorous; lamellae plane and adnate or slightly arcuate and decurrent, broad, subdistant, colored almost like the pileus; spores subellipsoid, purplish-brown, $8 \times 5 \mu$; stipe slender, equal, subflexuous, slightly whitish-fibrillose, especially toward the base, mealy at the apex, concolorous, containing a whitish pith, 2.5–5 cm. long.

TYPE LOCALITY: West Albany, New York.

HABITAT: On the ground among *Polytrichum* or other mosses.

DISTRIBUTION: New York and Massachusetts.

Peck found this species twice in May. The type specimens are at Albany. I got specimens at Lake Placid (156) in July, 1912, growing on a sandy, mossy bank in woods, and described them as follows:

“Hemispheric, slightly striate-sulcate on the margin, 4–5 mm. broad, smooth, glabrous, isabelline at the center, umbrinous-isabelline otherwise, margin straight; lamellae plane, distant, adnate with a decurrent tooth, pale-ferruginous or about umbrinous; stipe pruinose at the apex, lateritious, glabrous, filiform, tough, 3 cm. long, 0.5 mm. thick.”

Deconica bryophila was described from specimens collected by Peck in May at Delmar and Karner. There are several collections at Albany from New York, and two from Massachusetts, collected by Mackintosh and Davis in April and June respectively.

7. *Deconica pyrispora* sp. nov.

Pileus convex to subexpanded, abruptly umbonate, solitary, about 1 cm. broad; surface glabrous, dry or slightly hygrophalous, avellaneous, striate to the umbo, which is smooth and isabelline,

margin straight, appressed in young stages; lamellae slightly decurrent, or adnate with a decurrent tooth, inserted, somewhat ventricose, of medium distance, rather uneven on the edges; becoming purplish-brown, not variegated; spores pear-shaped, tapering gradually at one end and abruptly at the other, smooth, pale-smoky-purplish-brown under the microscope, about $7 \times 3.5\text{--}4.5 \mu$; stipe curved, equal, decidedly cartilaginous, glabrous, fibrillose toward the base, chestnut-colored, about 3.5 cm. long and 1.5 mm. thick.

TYPE LOCALITY: New York Botanical Garden, New York City.

HABITAT: In an old chestnut stump, growing on rotten wood and humus.

DISTRIBUTION: Known only from the type locality.

This interesting little species was found by me on August 29, 1911. It is characterized by a prominent nipple-like umbo and pear-shaped spores, which are purplish-black in mass. The affinities of the species are with *Athylospora*; but the lamellae are quite decurrent, and this character is seen to good advantage even in dried specimens.

8. *DECONICA SUBVISCIDA* Peck, Ann. Rep. N. Y. State Mus. 41: 70. 1888

Pileus thin, at first subconic, then convex or nearly plane, often slightly umbonate, gregarious, 6–12 mm. broad; surface glabrous, hygrophanous, pale-chestnut or reddish-tan-colored, subviscid and striatulate on the margin when moist, pallid or dull-buff when dry; lamellae broad, subdistant, adnate or slightly decurrent, at first whitish or dingy, then brownish-ferruginous; spores ellipsoid or ovoid, smooth, pale-ochraceous under the microscope, $7 \times 5 \mu$; stipe equal or tapering downward, fibrillose, hollow, brownish toward the base, paler above, the fibrils whitish or grayish, 2.5 cm. long, 2 mm. thick; veil slight, white, evanescent.

TYPE LOCALITY: Menands, New York.

HABITAT: On horse manure and manured ground.

DISTRIBUTION: New York and Michigan.

Peck collected the type specimens in August. He says it appears in wet weather in great abundance and in successive crops. Kauffman reports it from Michigan, growing in the open on manure and in the woods on moss. Both Peck and Kauffman consider it very nearly related to *D. bullacea*, which is true if the general appear-

ance alone is considered, but the lamellae and spores are totally distinct.

9. *DECONICA BULLACEA* (Bull.) Sacc. Syll. Fung. 5: 1058. 1887
Agaricus bullaceus Bull. Herb. Fr. pl. 566, f. 2; hyponym. 1791;
Pers. Syn. Fung. 412. 1801.

Pileus convex-hemispheric, sometimes umbonate, gregarious, 0.5–2 cm. broad; surface glabrous, viscid, smooth, slightly striate at times, bay-brown when fresh and moist, paler with age or on drying; context brownish-pallid, mild; lamellae adnate-decurrent, plane, very broad, triangular, subdistant, dark-purplish-brown at maturity with whitish edges; spores broadly-ellipsoid to ovoid, usually tapering at both ends, apiculate, smooth, varying from ochraceous to dull-ferruginous or darker under the microscope, purplish-brown in mass, $10\text{--}12 \times 8\text{--}9 \mu$; stipe cylindric, equal, pale-brownish, subfibrillose, solid or stuffed, 3–5 cm. long, 1–2 mm. thick; veil slight, evanescent.

TYPE LOCALITY: France.

HABITAT: Usually on horse manure in pastures and along roads.

DISTRIBUTION: Eastern United States, south to Mississippi, and west to Michigan; also in Europe; abundant in tropical America.

ILLUSTRATIONS: Bull. Herb. Fr. pl. 566, f. 2; Cooke, Brit. Fungi pl. 608 B (600 B); Pat. Tab. Fung. f. 235.

This species was first figured by Bulliard from specimens collected in France. While probably widely distributed, it has not often been reported from this country. The spores of excellent specimens collected in Jamaica are ovoid, smooth, opaque, umbrinous by transmitted light under the microscope, $11\text{--}12 \times 6\text{--}8 \mu$. They are darker than spores from specimens found in New York City.

DOUBTFUL SPECIES

Deconica atrorufa (Fries) Sacc. Syll. Fung. 5: 1059. 1887. (*Agaricus atrorufus* Fries, Syst. Myc. 1: 293. 1821.) Dr. Kauffman reports this species (as *Psilocybe*) from more than one locality in Michigan, growing gregariously on the ground in woods. His spore measurements agree with those made by Karsten, being $5\text{--}8 \times 4\text{--}5.5 \mu$. Fries got his name from Schaeffer, but some think he wrongly interpreted Schaeffer's plant.

ATYLOSPORA Fayod, Ann. Sci. Nat. VII. 9: 376. 1889

Psathyra Quél. Champ. Jura Vosg. 118. 1872; not *Psathyra* Spreng. 1818; not *Psathura* Commers. 1789.

This rather difficult genus, well represented both in temperate and tropical regions, is characterized by a cartilaginous stipe, a straight margin appressed when young, and the absence of a veil. It is difficult to distinguish in the herbarium from *Psilocybe* and *Drosophila*. *Psathyrella* differs in having black spores, but even here it is at times hard to draw the line. The species are mostly overlooked or given scant attention by collectors because generally inconspicuous and rather poorly known. In *Mycologia* for January, 1918, I discussed the 21 tropical American species, 11 of which were there described as new. None of our northern forms appear to grow under tropical conditions.

Stipe 2-4 cm. long.

Densely cespitose.

1. *A. microsperma*.

Not densely cespitose.

2. *A. vestita*.

Stipe 5-10 cm. long.

Densely cespitose.

3. *A. multipedata*.

Not densely cespitose.

Stipe 1 mm. thick.

4. *A. prunuliformis*.

Stipe 2-3 mm. thick.

Pileus pale-fawn-colored.

5. *A. australis*.

Pileus purplish-brown.

6. *A. umbonata*.

Stipe 3-5 mm. thick.

7. *A. striatula*.

1. *Atylospora microsperma* (Peck) comb. nov.

Psathyra microsperma Peck, Bull. Torrey Club 26: 68. 1899.

Pileus ovoid or subhemispheric, becoming deeply convex or subcampanulate, obtuse, densely cespitose, 1-2.5 cm. broad; surface even, hygrophanous, brown when moist, paler when dry, slightly floccose when young; context brownish; lamellae thin, crowded, adnate-seceding, white to purplish-brown, whitish on the edges; spores smooth, ellipsoid, purplish-brown, about $7 \times 4 \mu$; stipe equal, rigid-fragile, hollow, pure-white, fibrillose, 2.5-4 cm. long, 2-3 mm. thick.

TYPE LOCALITY: Ohio.

HABITAT: About old stumps.

DISTRIBUTION: Ohio and Michigan.

The type specimens collected by Lloyd (3480) in April are fairly well preserved at Albany. Kauffman says it occurs rarely in Michigan, having been found by him (365) growing in turf at Ann Arbor, in October, 1905. Some of his specimens determined by Peck are at Albany. They are thinner and more slender than the types.

2. *Atylospora vestita* (Peck) comb. nov.

Psathyra vestita Peck, Bull. N. Y. State Mus. 105: 28. 1906.

Pileus thin, submembranaceous, ovoid, conic or subcampanulate, obtuse, 8–16 mm. broad; surface at first covered with white, floccose fibrils, usually with a rufescent tint, soon paler or white and silky-fibrillose, sometimes slightly striate on the margin; lamellae thin, narrow, close, adnate, white when young, becoming blackish-brown; spores ellipsoid, purplish-brown, $7.5-10 \times 5-6 \mu$; stipe equal, hollow, flexuous, white, floccose-fibrillose, becoming silky-fibrillose, mealy and often striate at the apex, 2.5–4 cm. long, 2–3 mm. thick.

TYPE LOCALITY: North Elba, New York.

HABITAT: On fallen leaves and grass.

DISTRIBUTION: Known only from the type locality.

Type specimens collected by Peck in September, 1905, are well preserved at Albany, appearing much like a small form of *Drosophila appendiculata*. Kauffman recognized *P. semivestita* as occurring in Michigan and remarks that *P. vestita* is "very similar, if not the same, but the spore-sizes are given somewhat smaller."

3. *Atylospora multipedata* (Peck) comb. nov.

Psathyra multipedata Peck, Bull. Torrey Club 32: 80. 1905.

Pileus submembranaceous, conic or hemispheric, densely cespitose, forming tufts of many individuals, 12–16 mm. broad; surface glabrous, hygrophanous, light-bay or tawny when moist, cinereous when the moisture has escaped, the center retaining its moisture longer than the margin; lamellae thin, close, adnate, pallid or gray becoming brown, whitish on the edges; spores brown, ellipsoid, $6-8 \times 4-5 \mu$; stipe slender, equal, hollow, brittle, furfuraeous, becoming smooth or sometimes remaining fibrillose near the base, pure-white, 5–10 cm. long, 2 mm. thick.

TYPE LOCALITY: St. Louis, Missouri.

HABITAT: In grassy ground.

DISTRIBUTION: Vicinity of St. Louis, Missouri.

Excellent type specimens are at Albany, collected at one spot by N. M. Glatfelter (787) in September and October, 1900, 1902, and 1903. He made good notes on the fresh specimens and sent them to Peck. I have a fine cluster sent me by Dr. Lewis Sherman (35), who collected it at Milwaukee, Wisconsin, in October, 1914.

4. *Atylospora prunuliformis* sp. nov.

Pileus thin, subfleshy, convex, obtuse, gregarious to subcespitose, 1 cm. broad; surface dry, glabrous, rugose, pale-fawn-colored or light-tan-colored, margin concolorous, substriate; context thin, pale-tawny, the taste mild; lamellae adnate, broad, subdistant, subventricose, white; spores ellipsoid, sometimes ovoid, smooth, dark-bay under the microscope, about $12 \times 6 \mu$; stipe cylindric, very slender, glabrous, concolorous, paler and brownish at the apex, hollow, whitish-mycelioid at the base, 5 cm. long, 1 mm. thick.

TYPE LOCALITY: New York Botanical Garden, New York City.

HABITAT: In sandy soil in mixed woods.

DISTRIBUTION: Known only from the type locality.

Type collected by F. S. Earle (89) on June 22, 1902. This species much resembles *Prunulus*, both in a fresh and dried condition.

5. *Atylospora australis* sp. nov.

Pileus fragile, expanded, subumbonate, gregarious to cespitose, 1-3 cm. broad; surface glabrous, hygrophanous, slightly striate, pale-fawn-colored, slightly darker on the disk; lamellae adnexed, crowded, rather narrow, concolorous, then brownish; spores ellipsoid, smooth, opaque, purplish-brown under the microscope, about $8-9 \times 5 \mu$; stipe rigid-fragile, cylindric or slightly tapering above, glabrous or somewhat atomaceous, hollow, pure-white, 4-6 cm. long, 2-3 mm. thick; veil slight, soon vanishing, white.

TYPE LOCALITY: City Park, New Orleans, Louisiana.

HABITAT: On rotten wood or humus.

DISTRIBUTION: Vicinity of New Orleans.

Type collected by F. S. Earle (27) on September 3, 1908. Said to be common at the time. Also by Earle (117, 118) at Chalmitte, New Orleans, September 8, 1908.

6. *Atylospora umbonata* (Peck) comb. nov.

Psathyra umbonata Peck, Ann. Rep. N. Y. State Mus. 50: 106. 1897.

Pileus submembranaceous, campanulate, umbonate, gregarious to cespitose, 2–5 cm. broad; surface hygrophanous, purplish-brown and striatulate when moist, grayish-white when dry, smooth or slightly rugulose, atomate, the umbo commonly paler; context concolorous; lamellae rather broad, moderately crowded, ventricose, subadnate, brownish-red, becoming purplish-brown and finally almost black, whitish on the edges; spores ellipsoid, smooth, purplish-brown under the microscope, blackish-brown to almost black in mass, 12–15 x 7–8 μ ; stipe slender, flexuous, rigid-fragile, equal, hollow, white to pallid, slightly mealy at the apex, 5–10 cm. long, 2–3 mm. thick.

TYPE LOCALITY: Lake Pleasant, New York.

HABITAT: On chip dirt.

DISTRIBUTION: New York, Michigan, Missouri, and Washington.

ILLUSTRATION: Kauffm. Agar. Mich. pl. 56.

The type specimens, collected by Peck in July, are well preserved at Albany; and specimens sent to Peck from Missouri by Glatfelter appear to match the types. Kauffman reports it as rather frequent in Michigan and gives interesting notes as well as figures of it. I found it at Seattle, Washington, in the autumn of 1911 (628), growing in decaying trash in moist woods. This species is probably too near *Atylospora corrugis*. See doubtful species.

7. *Atylospora striatula* sp. nov.

Pileus thin, fragile, conic-campanulate to expanded, subumbonate, sometimes with a small umbilicus, scattered, 2–4 cm. broad; surface dry, glabrous, conspicuously long-striate, dull-bay to isabelline; context thin, brownish, with mild taste; lamellae adnexed, crowded, plane or ventricose, rather narrow, white or isabelline to purplish-brown; spores ellipsoid, smooth, pale-purplish-brown under the microscope, purplish-brown in mass, about 7 x 4 μ ; stipe rigid-fragile, equal, smooth, shining-white, hollow, 5–7 cm. long, 3–5 mm. thick.

TYPE LOCALITY: New York Botanical Garden, New York City.

HABITAT: On humus in shaded places.

DISTRIBUTION: Connecticut and New York.

Type collected by W. A. Murrill, July 3, 1915, on leaf-mold in rhododendron beds. Miss Eaton made a colored sketch at that time. Also collected by F. S. Earle at Redding, Connecticut, July 22, 1902 (614); at West Park, New York, August 7 and 8, 1903 (1776, 1811); and in the New York Botanical Garden, June 16, 1902 (108).

DOUBTFUL AND EXCLUDED SPECIES

Agaricus (Psathyra) pholidotus Mont. Syll. Crypt. 126. 1856. Collected in grassy ground at Columbus, Ohio, by Sullivant. Described as fugacious with scaly disk, reminding one of some species of *Coprinus*, but the gills are blackish-purple. I have not seen the types.

Athylospora corrugis (Pers.) Fayod, Ann. Sci. Nat. VII. 9: 376. 1889. Specimens from Bresadola greatly resemble the types of *A. umbonata*, but Peck says his species is much darker, striatulate, and atomate, with a less glabrous and more slender stipe and broader spores; also the umbo is very prominent and becomes white on drying.

Psathyra obtusata Fries, Syst. Myc. 1: 293. 1821. Reported by Kauffman from Michigan, occurring infrequently on very rotten wood. I have not seen his specimens.

Psathyra persimplex Britz. Bot. Centralb. 77: 436. 1899. Reported by Kauffman as rare on dead wood in hemlock woods in Michigan. He says it differs from *P. obtusata* in the size of its spores and the characteristic spreading of the margin of the pileus.

Psathyra polytrichophila (Peck) Sacc. See *Deconica*.

Psathyra roseolus (Clements) Sacc. Syll. Fung. 14: 154. 1899. (*Gymnochilus roseolus* Clements, Bot. Surv. Neb. 4: 23. 1896.) Collected on the ground on bluffs of the Missouri River, at Bellevue, Nebraska. Pileus hemispheric or convex, 1-2.5 cm. broad, glabrous or nearly so, wrinkled, vinous when wet, incarnate when dry; lamellae slightly remote, purplish-cinnamon-colored; spores ellipsoid, dark-purple, 12-13 x 7-8 μ ; stipe tall, fragile, fistulose, shining, glabrous, farinaceous-granular at the apex, 4-8 cm. long, 2 mm. thick. I have not seen the types.

Psathyra semivestita (Berk. & Br.) Sacc. Syll. Fung. 5: 1071. 1887. (*Agaricus semivestitus* Berk. & Br. Ann. Mag. Nat. Hist. III. 7: 376. 1861.) Described from England and reported by Kauffman from Michigan, growing gregariously on horse manure. He says Peck's *P. vestita* is *very similar*, and Peck says his species differs in color and in being wholly clothed when young with white, floccose fibrils.

Psathyra silvatica Peck, Ann. Rep. N. Y. State Mus. 42: 116. 1889. The types from North Elba are attached to a sheet at Albany and marked in Peck's handwriting "equal *Tubaria silvatica* Peck." The species is omitted from Peck's later account of the New York species of *Psathyra*.

PSATHYRELLA (Fries) Quél. Champ. Jura Vosg. 122. 1872

Agaricus § *Psathyrella* Fries, Epicr. Myc. 237. 1838.

Characterized by black spores and a straight, appressed margin when young. It is best known, perhaps, through its interesting little representative, *Psathyrella minutula*, which is widely distributed. In *Mycologia* for January, 1918, the six species known from tropical North America were discussed, five of them being there described as new.

Stipe 1-5 cm. long.

Pileus white or gray, furfuraceous; hymenophores densely gregarious or cespitose.

1. *P. minutula*.

Pileus bluish-white, changing to sepia-brown on drying except at the apex.

2. *P. leucostigma*.

Pileus reddish-cinereous, becoming paler on drying; stipe scarcely 1 mm. thick.

3. *P. tenera*.

Pileus some shade of brown.

Pileus 2-4 mm. broad.

4. *P. minima*.

Pileus 8-12 mm. broad; decorated with erect hairs.

5. *P. hirta*.

Pileus 1-3 cm. broad.

Stipe 3-4 mm. thick.

6. *P. castaneicolor*.

Stipe 1-2 mm. thick.

Stipe white, glabrous.

7. *P. betulina*.

Stipe pale-brown, fibrillose.

8. *P. Bartholomaei*.

Stipe 5-15 cm. long.

Pileus bluish-white, with yellow disk.

9. *P. gracillima*.

Pileus whitish, becoming grayish.

10. *P. debilis*.

Pileus grayish-black.

Surface deeply radiate-sulcate.

11. *P. Clementsii*.

Surface smooth, not sulcate.

12. *P. angusticeps*.

Pileus some shade of brown, yellowish-brown, or reddish-brown.

Stipe 1-2 mm. thick.

Stipe white.

13. *P. atomata*.

Stipe reddish-fulvous.

14. *P. petasiformis*.

Stipe 2-4 mm. thick.

Stipe 5-8 cm. long.

Lamellae crowded.

15. *P. odorata*.

Lamellae distant.

16. *P. distantifolia*.

Stipe 10-13 cm. long.

17. *P. graciloides*.

I. PSATHYRELLA MINUTULA (Schaeff.) Murrill, Mycologia 10:

26. 1918

Agaricus minutulus Schaeff. Fung. Bavar. Ind. 72. 1774.

Agaricus disseminatus Pers. Syn. Fung. 403. 1801.

Psathyrella disseminata Quél. Champ. Jura Vosg. 123. 1872.

Pileus membranaceous, ovoid-campanulate, densely gregarious or cespitose, 6-10 mm. broad; surface minutely scaly, becoming smooth, whitish, gray, or grayish-brown, often buff on the umbo, margin sulcate-plicate; context very thin, with mild taste and no odor; lamellae adnate, broad, subdistant, ventricose, white to gray, then black; spores ellipsoid, tapering at both ends, smooth, dark-purplish-brown in mass, chestnut-bay under the microscope, 8-9 x 4 μ ; stipe furfuraceous to glabrous, white or yellowish to cinereous, very slender, becoming hollow, often curved, about 2.5 cm. long and 1 mm. thick.

TYPE LOCALITY: Bavaria.

HABITAT: On decayed wood and moist earth containing organic matter.

DISTRIBUTION: Cosmopolitan.

ILLUSTRATIONS: Atk. Stud. Am. Fungi, f. 49; Boud. Ic. Myc. pl. 140; Gill. Champ. Fr. pl. 141 (586); Hard, Mushr. f. 280; Mycologia 6: pl. 132, f. 1; Pat. Tab. Fung. f. 351; Schaeff. Fung. Bavar. pl. 308; Bull. U. S. Dept. Agr. 175: pl. 29, f. 2.

This very attractive little species was first described from Bavaria and accurately figured in color by Schaeffer. The synonymy is considerably complicated but it seems quite certain that the specific name under which the plant is best known has been in use

since 1801, when Persoon extended his former use of this name to include the juvenile form as figured by Schaeffer in his plate 308. The plant is widely distributed and very abundant, often occurring in one spot in such large numbers that it is practically impossible to count the dainty little caps. It may be looked for throughout the season from early summer until late autumn and often appears on the soil in greenhouses during the winter. The species strongly suggests *Coprinus*, both in its mode of expanding and in blackening with age, when the black spores are mature. The microscopic structure of the hymenium is also similar to that of *Coprinus*; and Lange has transferred it to that genus. Buller, however, criticizes him for so doing and advances several good reasons why it should remain in *Psathyrella*.

2. *PSATHYRELLA LEUCOSTIGMA* Peck, Bull. Torrey Club **22**: 490.
1895

Pileus submembranaceous, campanulate, 8-12 mm. broad; surface striate, bluish-white when fresh, changing to sepia-brown when dried, the apex remaining whitish; lamellae crowded, lead-colored when young, becoming black with age, whitish on the edges; spores ellipsoid, black, $12.5-15 \times 7.5 \mu$; stipe slender, flexuous, hollow, white, 2.5-4 cm. long, about 2 mm. thick.

TYPE LOCALITY: Kansas.

HABITAT: On wet ground under trees.

DISTRIBUTION: Known only from the type locality.

The type specimens, collected by Bartholomew in July, do not appear to be either at Albany or in the Ellis Collection.

3. *PSATHYRELLA TENERA* Peck, Ann. Rep. N. Y. State Mus. **47**:
144. 1894

Pileus thin, campanulate, obtuse, 6-10 mm. broad; surface moist or subhygrophanous, reddish-cinereous when moist, paler when dry, slightly rugulose and atomate; lamellae broad, adnate, plane or but slightly ascending, subdistant, at first pallid or subcinereous, then umber and finally blackish, white on the edges; spores narrowly ellipsoid, $12-16 \times 8-10 \mu$; stipe slender, glabrous, stuffed or hollow, white, with a white, floccose mycelium at the base, 2.5-4 cm. long, scarcely 1 mm. thick.

TYPE LOCALITY: Pierrepont Manor, Jefferson County, New York.

HABITAT: On damp mucky ground in open woods.

DISTRIBUTION: Known only from the type locality.

The type specimens, collected by Peck in June, are well preserved at Albany, and seem very near plants called *P. atomata* Fries by Bresadola. Specimens from Westport so named appear to be distinct.

4. *PSATHYRELLA MINIMA* Peck, Ann. Rep. N. Y. State Mus. 41: 70. 1888

Pileus membranaceous, hemispheric, obtuse, 2-4 mm. broad; surface obscurely striatulate when moist, even and pruinose-atomate when dry, dingy-yellow or reddish-brown, becoming paler on drying; lamellae broad, adnate, white, becoming yellowish-cinnamon; spores narrowly ellipsoid, black, 6-8 x 3-4 μ ; stipe capillary, minutely mealy or furfuraceous under the lens, pellucid, white, 8-12 mm. long.

TYPE LOCALITY: Adirondack Mountains, New York.

HABITAT: On manure in woods.

DISTRIBUTION: Known only from the type locality.

This tiny species is represented only by a few specimens collected by Peck in July and now attached to a sheet at Albany.

5. *PSATHYRELLA HIRTA* Peck, Ann. Rep. N. Y. State Mus. 50: 107. 1897

Pileus thin, hemispheric, subcespitose, 8-12 mm. broad; surface hygrophanous, at first covered with erect, fascicled hairs, reddish-brown when moist, grayish-brown or whitish when dry; lamellae adnate or subdecurrent, subcrowded, broad, pallid to black; spores 12-14 x 6-7 μ ; stipe flexuous, shining, white, hollow, squamose, 2.5-5 cm. long, 2-3 mm. thick.

TYPE LOCALITY: Minerva, New York.

HABITAT: On manured, shaded ground.

DISTRIBUTION: Known only from the type locality.

The type specimens collected by Peck are attached to a sheet at Albany. Others so named collected by Kellerman in October, 1906, in a greenhouse at Columbus, Ohio, appear to agree with the type of *P. Bartholomaei*.

6. *Psathyrella castaneicolor* sp. nov.

Pileus fleshy, hemispheric to expanded, 3 cm. broad; surface

hygrophanous, glabrous, sometimes having fragments of the white veil when very young, chestnut to tan, margin even, splitting; context thin, brownish, with mild but mawkish taste; lamellae sinuate-adnate, subcrowded, broad, plane, white to purplish, then black; spores ellipsoid or ovoid, smooth, opaque, sometimes apiculate, very dark-bay under the microscope, about $12 \times 7 \mu$; stipe subcylindric, subglabrous, floccose above, hollow, white, 4 cm. long, 3-4 mm. thick.

TYPE LOCALITY: Redding, Connecticut.

HABITAT: On a pile of decaying leaves.

DISTRIBUTION: Known only from the type locality.

Type collected by F. S. Earle (381) on July 17, 1902.

7. *PSATHYRELLA BETULINA* Peck, Bull. Torrey Club **34**: 101.
1907

Pileus thin, submembranaceous, fragile, conic or convex, sometimes broadly umbonate, 1-2.5 cm. broad; surface glabrous, tomentate, hygrophanous, fuscous or dark-brown when moist, paler when dry; lamellae broad, adnate, subdistant, cinereous, becoming black, white on the edges; spores ellipsoid, black, $8-10 \times 5-6 \mu$; stipe fragile, equal, hollow, glabrous, shining, white, 2.5-5 cm. long, 1-2 mm. thick.

TYPE LOCALITY: Stow, Massachusetts.

HABITAT: On decaying branches of white birch.

DISTRIBUTION: Known only from the type locality.

The type specimens are at Albany, collected by Simon Davis on September 26, 1906. They resemble species of *Athylospora*, but the spores are black.

8. *PSATHYRELLA BARTHOLOMAEI* Peck, Bull. Torrey Club **22**:
490. 1895

Pileus thin, subconic or convex, 1.5-3 cm. broad; surface glabrous, striate on the margin, pale-brown; lamellae crowded, nearly plane, adnate, brownish, becoming black; spores ellipsoid, $10-13 \times 5-6.5 \mu$; stipe slender, flexuous, hollow, adorned with a few grayish fibrils, pale-brown, 2.5-4 cm. long, scarcely 2 mm. thick.

TYPE LOCALITY: Rockport, Kansas.

HABITAT: On wet ground in woods; also in greenhouses.

DISTRIBUTION: Ohio and Kansas.

ILLUSTRATION: Hard, Mushr. f. 281.

The type specimens were collected by Bartholomew (1838) on July 28, 1895, and are in the Ellis Collection here. The Ohio plants were collected by Kellerman in October in a greenhouse at Columbus.

9. *PSATHYRELLA GRACILLIMA* Peck, Bull. Torrey Club 23: 417. 1896

Pileus membranaceous, convex or nearly plane, 1.5–4 cm. broad; surface finely striate nearly to the disk, subhyaline, bluish-white with a pinkish tint, the disk yellow and commonly depressed; lamellae thin, crowded, rounded behind and adnexed or nearly free, light-slate-colored when young, becoming black or variegated with black; spores oblong-ellipsoid, pointed at one end, 13.5–15 x 6–7.5 μ ; stipe slender, elongate, erect, hollow, whitish or cream-colored, 7.5–12.5 cm. long, about 2 mm. thick.

TYPE LOCALITY: Rooks County, Kansas.

HABITAT: On damp ground among weeds.

DISTRIBUTION: Pennsylvania and Kansas.

The type specimens sent to Peck by Bartholomew (2201) were collected on July 20, 1896. They resemble *Coprinus Spraguei*, but are larger. I found the species at Ohio Pyle, Pennsylvania, in July, 1905.

10. *PSATHYRELLA DEBILIS* Peck, Bull. Torrey Club 23: 418. 1896

Pileus membranaceous, campanulate, umbonate, 1.5–3.5 cm. broad; surface striate nearly to the umbo, subhyaline, whitish, becoming grayish; lamellae adnate, thin, narrow, crowded, whitish when young, becoming black; spores broadly ellipsoid, 13 x 8 μ ; stipe slender, weak, flexuous, white, hollow, never erect, 5–8 cm. long, 2–3.5 mm. thick.

TYPE LOCALITY: Rooks County, Kansas.

HABITAT: On damp ground, attached to decaying stems.

DISTRIBUTION: Known only from the type locality.

Collected by Bartholomew (2199) on July 20, 1896. A part of the type collection is at Albany and a part in the Ellis Collection here. According to Peck, the species suggests *Psathyra gyroflexa*, but differs in the umbonate pileus, the larger spores, and in having no purplish tint to the lamellae.

11. *PSATHYRELLA CLEMENTSII* Sacc. Syll. Fung. 14: 163. 1899
Psathyrella sulcata Clements, Bot. Surv. Neb. 3: 13. 1894. Not
P. sulcata (Dunal) Sacc. 1887.

Pileus campanulate to expanded, 1-2.5 cm. broad; surface deeply radiate-sulcate, grayish-black, light-yellow on the umbo, pellucid; lamellae adnexed, subventricose, cinereous, black on the edges; spores ovoid-apiculate, purplish-brown, $8-10 \times 5-6 \mu$; stipe slender, hollow, shining, white above, red below, 4-6 cm. long, 1-2 mm. thick.

TYPE LOCALITY: Lincoln, Nebraska.

HABITAT: On the ground.

DISTRIBUTION: Known only from the type locality.

The type specimens were collected by Clements. I have not seen them.

12. *PSATHYRELLA ANGUSTICEPS* Peck, Bull. Torrey Club 33: 217.
1906

Pileus very thin, membranaceous, conic or subcampanulate, subacute, often with a small but prominent umbo, gregarious, 1-2 cm. broad; surface hygrophanous, fragile, minutely flocculose, appendiculate with minute fragments of the whitish veil, sometimes striate on the margin, grayish-brown, whitish or grayish on the margin; lamellae ascending, thin, brittle, moderately crowded, adnate, pale-olive-green becoming darker and finally black; spores broadly-ellipsoid, black, abruptly-narrowed at the ends, $15-20 \times 10-12 \mu$; stipe very long, slender, fibrous, rather tough, hollow, straight or nearly so, ashy-gray above, chestnut-colored below, sometimes slightly thicker toward the base, 5-9 cm. long, about 1 mm. thick.

TYPE LOCALITY: Falmouth, Massachusetts.

HABITAT: On grassy ground.

DISTRIBUTION: Known only from the type locality.

The type specimens, which are well preserved at Albany, were collected by Simon Davis on June 22, 1905. They resemble a narrow, unexpanded form of *Panaeolus campanulatus*.

13. *PSATHYRELLA ATOMATA* (Fries) Quél. Champ. Jura Vosg.
123. 1872

Agaricus atomatus Fries, Syst. Myc. 1: 298. 1821.

Pileus bell-shaped, obtuse, solitary or gregarious, 1-2.5 cm. broad; surface atomaceous, hygrophanous, livid, tan or pale-flesh-colored when dry; margin slightly striate, dry, even or wrinkled; lamellae adnate, subdistant, broad, ventricose, whitish to blackish; spores ovoid to ellipsoid, $13-15 \times 6-8 \mu$; stipe equal, lax, slightly

bent, not rooting, pulverulent at the apex, tubular, white, 5 cm. long, 2 mm. thick.

TYPE LOCALITY: Europe.

HABITAT: On grassy ground along paths.

DISTRIBUTION: Northeastern United States; also in Europe.

ILLUSTRATIONS: G. Bernard, Champ. Rochelle *pl.* 25, *f.* 5; Cooke, Brit. Fungi *pl.* 642 (638); Pat. Tab. Fung. *f.* 236; Saunders, Smith & Bennett, Myc. Illust. *pl.* 37, *f.* 2.

Described from Sweden, and reported from several parts of the United States by Ellis, Kellerman, Johnson, Bundy, and others. I have specimens from Paris and London, collected by myself, which agree with New York specimens collected by O. F. Cook. Peck's plants from West Albany so named are mounted and figured on a sheet with *P. graciloides*, which they much resemble.

14. *Psathyrella petasiformis* sp. nov.

Pileus conic to campanulate with conic umbo, becoming subexpanded with upturned edges, gregarious, reaching 2 cm. broad and about 1 cm. high; surface glabrous, hygrophanous, striatulate to the disk, fulvous with a reddish tint, fading to yellow except on the disk, margin thin, yellowish, slightly projecting; context very thin; lamellae adnate, crowded, inserted, grayish-olive to nearly black, whitish on the edges; spores oblong-ellipsoid, tapering at both ends, smooth, smoky-purplish-brown under the microscope, $8-10 \times 4.5-5.5 \mu$; stipe cartilaginous, slightly fibrillose-scaly, fulvous with a reddish tint, hollow, about 5 cm. long and 1-2 mm. thick.

TYPE LOCALITY: Buck Hill Falls, Pennsylvania.

HABITAT: On much-decayed wood in woods.

DISTRIBUTION: Known only from the type locality.

Collected on August 28, 1921, by Mrs. John R. Delafield, who made good notes and a colored sketch from the fresh specimens. The specific name selected was suggested by the hat-shaped pileus.

15. *PSATHYRELLA ODORATA* (Peck) Sacc. Syll. Fung. 5: 1136. 1887

Agaricus odoratus Peck, Ann. Rep. N. Y. State Mus. 24: 70.
1872.

Pileus thin, fragile, ovoid-convex, at length expanded, gregarious or subcespitose, 2.5-5 cm. broad; surface smooth, hygrophanous, dark-reddish-brown and striatulate on the margin when

moist, dirty-white or clay-colored with a pinkish tint, subatoma-ceous and radiately-rugose when dry; context having a strong odor resembling that of *Sambucus pubens*; lamellae crowded, broad, attached, with a slight spurious decurrent tooth, dingy-flesh-colored, then rosy-brown, finally black with whitish edges; spores ellipsoid-cymbiform, 9μ long; stipe pallid, equal, hollow, slightly enlarged at the base, slightly mealy and striate at the apex, subfibrillose when young, 5-8 cm. long, 2-4 mm. thick.

TYPE LOCALITY: West Albany, New York.

HABITAT: About manure heaps.

DISTRIBUTION: Known only from the type locality.

The type specimens at Albany, collected by Peck in May, are attached to a sheet and fairly well preserved. He seems to have found it in quantity. *Psilocybe atomatoides* seems very close.

16. ***Psathyrella distantifolia*** sp. nov.

Pileus convex to expanded, becoming slightly depressed at the center at times, solitary, about 3 cm. broad; surface dry or slightly hygrophanous, glabrous, conspicuously striate, dark-isabelline to fuliginous; lamellae adnate or sinuate, broad, distant, becoming dark-fumosus to almost ater, whitish on the edges; spores narrowly-ellipsoid, sometimes apiculate, smooth, opaque, dark-bay under the microscope, about $10 \times 5\mu$; stipe slender, equal, smooth, white, glabrous, hollow, about 7 cm. long, 2-3 mm. thick.

TYPE LOCALITY: Bronx Park, New York City.

HABITAT: On loam in woods.

DISTRIBUTION: Known only from the type locality.

The type specimens were collected by myself on September 10, 1911, and a photograph taken of them. This species is rather near *Psilocybe atomatoides* but the gills are more distant and the spores larger and darker.

17. *PSATHYRELLA GRACILOIDES* (Peck) Sacc. Syll. Fung. 5: 1127.

1887

Agaricus graciloides Peck, Ann. Rep. N. Y. State Mus. 30: 42.
1878.

Pileus thin, conic or campanulate, gregarious, 2.5 cm. broad; surface glabrous, hygrophanous, brown and striatulate when moist, whitish and subrugulose when dry; lamellae ascending, rather broad, subdistant, brown, becoming blackish-brown, whitish on the edges; spores ellipsoid, blackish, $12-16 \times 8-10\mu$; stipe long,

straight, fragile, hollow, smooth, white, 10-13 cm. long, 2-4 mm. thick.

TYPE LOCALITY: Maryland, New York.

HABITAT: On the ground in an old dooryard.

DISTRIBUTION: New York.

ILLUSTRATION: Ann. Rep. N. Y. State Mus. 30: pl. 1, f. 1-4.

Type specimens were collected by Peck in September. Figured specimens attached to a sheet are from Knowersville and were called "*P. gracilis* Fr." Half a dozen other collections from New York appear to match the type. *P. debilis* does not seem very distinct.

DOUBTFUL SPECIES

Psathyrella crenata (Lasch) Fries, Hymen. Eur. 315. 1874. Kauffman refers a Michigan plant to this species, citing differences, and adding that it agrees well with Cooke's figure.

Psathyrella falcifolia (Mont.) Sacc. Syll. Fung. 5: 1134. 1887. (*Agaricus falcifolius* Mont. Syll. Crypt. 127. 1856.) Described from specimens collected by Sullivant at Columbus, Ohio, growing in clusters on logs and dead leaves. Type not seen.

Psathyrella hiascens (Fries) Quél. Champ. Jura Vosg. 123. 1872. (*Agaricus hiascens* Fries, Syst. Myc. 1: 303. 1821.) Peck reported this species from New York on the basis of specimens collected by him in June under willows at West Albany, and drawn in color. They are thin, campanulate, and multistriate, with very long, slender stipes;—quite different in appearance from the drawings made by Oersted in Costa Rica. The spores of Peck's specimens are said to measure 12-16 x 8-10 μ .

Psathyrella rupincola (Mont.) Sacc. Syll. Fung. 5: 1129. 1887. (*Agaricus rupincola* Mont. Syll. Crypt. 127. 1856.) Described from specimens collected at Columbus, Ohio, by Sullivant, in May, growing from fissures in rocks. Type not seen.

NEW COMBINATIONS

For the convenience of those who prefer to use the older nomenclature, the following species described as new in *Atylospora* are transferred to *Psathyra*:

ATYLOSPORA AUSTRALIS = ***Psathyra australis***

ATYLOSPORA PRUNULIFORMIS = ***Psathyra prunuliformis***

ATYLOSPORA STRIATULA = ***Psathyra striatula***

NEW YORK BOTANICAL GARDEN.